

CLAIMS

1. A highly endurable heat insulating material characterized by being provided on the surface of a layer 5 of inorganic heat insulating fibers with a flame sprayed film of a fire-resistant ceramic substance through the medium of a coating film of a surface hardening material.

2. A highly endurable heat insulating material according to claim 1, wherein the inorganic heat insulating 10 fiber is formed of one member or a combination of two or more members selected from the group consisting of alumina-silica substance, clay substance, zirconia, mullite, zircon, magnesia, calcia, dolomite, silicon carbide, silicon nitride, and carbon fibers.

15 3. A highly endurable heat insulating material according to claim 1 or claim 2, wherein the high-temperature property of the surface hardening material is similar to the high-temperature property of the flame sprayed film of a fire-resistant ceramic substance.

20 4. A highly endurable heat insulating material according to any one of claims 1 - 3, wherein the fire-resistant ceramic substance is at least one member selected from the group consisting of simple substances of alumina-silica substance, refractory clay, zirconia, mullite, zircon, 25 magnesia, calcia, dolomite, corundum, bauxite, alumstone, silicon carbide, and chromite and complexes thereof.

30 5. In the production of a highly endurable heat insulating material according to any one of claims 1 - 4, a method for the production of the highly endurable heat insulating material characterized by coating the surface of an inorganic heat insulating fiber with the raw material composition for the surface hardening material and then lava

flame spraying a fire-resistant ceramic powder material on the raw material composition of the surface hardening material thereby forming a coating film of the surface hardening material and the flame sprayed film of the heat-resistant ceramic substance.

6. A furnace characterized by possessing a highly durable heat insulating material set forth in any one of claims 1 - 4 as part or whole of a fire-resistant article.

7. A smoke discharging device characterized by 10 possessing a highly durable heat insulating material set forth in any one of claims 1 - 4 as part or whole of a fire-resistant article.

8. A tunnel characterized by possessing a highly durable heat insulating material set forth in any one of 15 claims 1 - 4 as part or whole of a fire-resistant article.

9. In working a highly durable heat insulating material for the use set forth in any one of claims 6 - 9, a working method characterized by setting an inorganic heat insulating fiber on an iron skin, a fire-resistant substrate, 20 or a concrete, applying a surface hardening agent to the surface of the fiber, and subsequently forming a film of a fire-resistant ceramic substance by flame spraying on the coat of the surface hardening agent.